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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Ronald L. Blair

Serial No.: 10/086,649

Confirmation No.: 6963

Filed: March 01, 2002

For: **AUDIO FREQUENCY SCALING DURING VIDEO TRICK MODES**

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§ Group Art Unit: 2621
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§ Examiner: Heather Rae Jones
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APPEAL BRIEF

Dear Sir:

Appellant submits this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2621 dated December 01, 2006, finally rejecting claims 1-24.

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Real Party in Interest

The real party in interest is Thomson Licensing.

Related Appeals and Interferences

Appellant asserts that no other appeals or interferences are known to the Appellant, the Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-24 were originally presented with the filed application. The Appellant's claims 1-2, 11, 13-14 and 19 were amended in prosecution to more clearly define the invention of the Appellant, to correct for informalities and to distinguish the invention of the Appellant over cited art. All other claims remain unamended. The Appellant's claims 1-2, 6, 11-14, 18, 23 and 24 stand finally rejected under 35 U.S.C. § 102(e) as being anticipated by Suito et al. (US Patent No. 6,925,340, hereinafter "Suito"). In addition, the Appellant's claims 7-10 and 19-22 stand finally rejected as being unpatentable over Suito as applied to claims 1 and 13 above, and further in view of Shimura (US Patent No. 6,658,197). Finally, the Appellant's claims 3-5 and 15-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Status of Amendments

A first response was filed on September 18, 2006 to overcome a First Office Action dated July 03, 2006. In the First Office Action, the Examiner rejected the Appellant's claims 1-2, 6, 11-14, 18, 23 and 24 under 35 U.S.C. § 102(e) as being anticipated by Suito et al. (US Patent No. 6,925,340, hereinafter "Suito"). The Examiner further rejected the Appellant's claims 7-10 and 19-22 under 35 U.S.C. § 103(a) as being unpatentable over Suito in view of Shimura (US Patent No. 6,658,197). The Examiner also objected to the Appellant's claims 3-5 and 15-17 as being dependent upon a rejected base claim, but stated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In the response filed on September 18, 2006, the Appellant amended claims 1-2, 11, 13-14 and 19 to more clearly define the invention and to correct for informalities and set forth arguments traversing the rejections issued by the Examiner and distinguishing the Appellant's invention over the cited prior art.

A second response was filed on February 20, 2007 to overcome a Final Office Action dated December 01, 2006. In the Final Office Action, the Examiner again rejected the Appellant's claims 1-2, 6, 11-14, 18, 23 and 24 under 35 U.S.C. § 102(e) as being anticipated by Suito and rejected the Appellant's claims 7-10 and 19-22 under 35 U.S.C. § 103(a) as being unpatentable over Suito in view of Shimura. In addition, the Examiner again objected to the Appellant's claims 3-5 and 15-17 as being dependent upon a rejected base claim, but stated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In the response filed on February 20, 2007, the Appellant set forth further arguments traversing the rejections issued by the Examiner and distinguishing the Appellant's invention over the cited prior art.

The Examiner responded to the Appellant's response of February 20, 2007 with an Advisory Action dated March 22, 2007. In the Advisory Action, the Examiner indicated that the response dated January 02, 2007 does NOT place the application in condition for allowance because all arguments fail to be persuasive. In response to the Advisory Action dated March 22, 2007, the Appellant submitted a Notice of Appeal dated April 09, 2007.

The claims on appeal are those contained presented in the Appellant's response filed on September 18, 2006, which are the same as in the Appellant's

response filed on February 20, 2007. That is, the claims on appeal are the Appellant's claims 1-24, which are listed in the attached Claims Appendix.

Summary of Claimed Subject Matter

The invention of the Appellant provides a method and apparatus for improved audio content playback during video trick modes. The Appellant teaches that in various embodiments, the trick mode can be a playback speed that is faster or slower than normal play speed. The coded digital data comprises video programming with corresponding audio content. The Appellant teaches that in one embodiment of the invention, a decoder decodes from a portion of the digital data comprising the audio signal a plurality of digital audio samples corresponding to a selected portion of the video presentation. Subsequently, a digital signal processor (DSP) can translate the audio samples from time domain to frequency domain and scale a playback audio frequency associated with the audio samples to compensate for the changed audio pitch resulting from the trick mode playback speed.

According to one aspect of the invention, for fast trick modes, the decoder can drop selected ones of the audio samples at a rate approximately corresponding to a selected trick mode video playback speed of the video presentation. A digital-to-analog (D/A) converter can subsequently generate an audio playback signal corresponding only to a remaining set of the audio samples. The audio samples can be dropped at an average rate of approximately (n-1) of every *n* samples, where n is equal to the selected trick mode playback speed relative to a normal playback speed. In order to compensate for the dropped audio samples, the DSP can transform the audio samples, which are in the time domain, to their frequency domain equivalent and preferably frequency scale the playback audio pitch by a factor of approximately 1/*n*. Additionally, the amplitude of the audio samples can be scaled by a factor of approximately 1/*n*. Subsequent to amplitude and frequency scaling the frequency domain audio samples, the DSP can transform the scaled frequency domain audio samples into to their corresponding time domain equivalent for playback.

According to an alternative aspect, for slow speed trick modes, the decoder can repeat selected ones of the audio samples at a rate that is inversely proportional to a selected trick mode video playback speed of said video presentation. This can produce a trick mode set of audio samples. The trick mode audio samples can subsequently be provided to the digital to analog converter to generate an audio playback signal corresponding to the trick mode set of audio samples. The audio

samples can be repeated 1/*n* times, where n is equal to the selected trick mode playback speed relative to a normal playback speed. In order to compensate for the additional audio samples, the DSP can transform the audio samples from time domain to frequency domain and frequency scale the playback audio frequency by a multiplying factor of approximately 1/*n*. The amplitude of the frequency domain audio samples can also be scaled by a factor of approximately *n*. The DSP can subsequently transform the frequency and amplitude scaled frequency domain audio samples into their time domain equivalents for playback.

As suggested in MPEP 1206, the Appellant now reads at least two of the broadest appealed claims on the specification and on the drawings. It should be understood, however, that the appealed claims may read on other portions of the specification or other figures that are not listed below.

The Appellant's Specification specifically refers to Figure. 1 for teaching an apparatus for implementing the various advanced operating features in accordance with the inventive arrangements. The Appellant teaches that Figure 1 is a block diagram of an exemplary DVD video player in which the present invention may be implemented. The device 100 is capable of reading from the disc medium, in this example, a rewritable DVD 102. The device comprises a mechanical assembly 104, a control section 120, and a video/audio output processing path 170. The Appellant teaches that the apparatus of the invention includes a control section 120 which comprises a control central processing unit (CPU) 122 and that a servo 110 can also be considered part of the control section. The Appellant further teaches that suitable software or firmware is provided in memory for the conventional operations performed by control CPU 122 and that program routines for the advanced features 136 are provided for controlling CPU 122 in accordance with the invention. In addition, it is taught that a separate buffer 136 can be provided to implement other advanced playback functions, including control over trick mode playback and that such trick mode playback modes can include forward and reverse playback speeds other than standard 1X playback.

The Appellant further teaches that the player of Figure 1 can also include a digital signal processor (DSP) 186, which can be controlled by the control CPU 122. The digital signal processor 186 can perform audio frequency scaling during video trick modes. The Appellant teaches that the digital signal processor 186 can receive from audio decoder 184, digital audio samples corresponding to a selected video

presentation being played. In standard, non-trick modes, the DSP 186 can remain inactive and the audio D/A 184 can process digital audio received from the audio decoder 182. However, when a trick mode playback has been selected, the audio D/A 184 can be configured to receive specially processed digital audio from the DSP 186. The Appellant further teaches that the DSP 186 can be configured to perform frequency and amplitude scaling. To facilitate scaling of the frequency and amplitude of an input audio signal, the DSP can convert the input audio signal that is in the time domain to a frequency domain audio signal. The frequency domain audio signal can be scaled and subsequently transformed back to a time domain audio signal.

The Appellant refers to Figure 2 for providing an exemplary block diagram useful for understanding the operation of the DSP 186. As depicted in Figure 2, the DSP 186 can include a FFT processing element 186a, a frequency scaling element 186b, an amplitude scaling element 186c and an inverse FFT processing element 186d. The FFT processing element 186a can transform digital audio samples from time domain to their frequency domain equivalents. The frequency scaling processing element 186b can be configured to receive the frequency domain audio samples and scale the frequency of the received frequency domain audio samples. The amplitude scaling element 186c can be configured to receive the frequency scaled audio samples and scale the amplitude of the received frequency scaled audio samples. The inverse FFT processing element 186d can be configured to receive and transform the amplitude scaled audio samples from the frequency domain back to their equivalent time domain audio signals. The Appellant teaches that although the frequency and amplitude scaling elements are separately shown, the invention is not limited. In that regard the Appellant teaches that a single scaling element can be configured to scale the amplitude and the frequency of audio samples.

With reference to Figure 3, the Appellant teaches a process that is useful for understanding the inventive arrangements of FIGURE 2 as implemented in an exemplary media player such as device 100. The process in FIGURE 3 is described relative to a fast forward playback since audio playback in reverse trick modes is generally not desirable.

The process of Figure 3 begins at step 300 when the unit is operated in a playback mode. In step 305, the control CPU 122 monitors user inputs from the

advanced features buffer 136. In step 310, the control CPU 122 determines whether the trick mode fast forward playback speed is selected. In a case where it has been determined that the trick mode fast forward playback has been selected, the control CPU 122 continues to steps 315 through 345 for trick mode playback. Otherwise, control returns to the processing step 300.

The Appellant teaches that if a fast playback trick mode has been selected in step 310, the control CPU 122 reconfigures packet video decoder 178 to perform trick mode video playback at speed *n*X where *n* is equal to the selected trick mode playback speed relative to a normal playback speed 1X. If the playback speed is two times faster than normal playback speed, then *n* = 2. The Appellant teaches that there are a variety of ways in which packet video decoder 178 can be configured to provide video playback at faster than normal speeds. For example, the simplest approach would be to cause the packet video decoder to simply drop certain decoded pictures. For example, every other picture to be displayed can be dropped in the case of 2X playback. However, other approaches can also be used to alter the video playback speed.

The Appellant goes on to teach that in step 315, the control CPU 122 determines *n*, where *n* is the video trick mode playback speed relative to the normal playback speed. In step 320, the audio data for the segment of the video presentation that is being played back in the video trick mode is read. In step 325, the control CPU 122 configures the audio decoder 182 or DSP 186 to drop selected audio samples by dropping audio samples at a rate of (n-1) of every *n* samples. Dropping audio samples in this manner has the advantageous effect of speeding up the audio to substantially match the speed of the video. However, if the remaining audio samples were simply passed to the audio D/A 184 for subsequent conversion to analog format, then the result would be a change in frequency of the audio by a factor of *n*. This change in frequency can cause voices to be high pitched and difficult to understand. Accordingly, the digital audio output from the audio decoder 182 can be processed by DSP 186.

In step 330, the DSP transforms remaining audio samples from time domain to their corresponding frequency domain equivalents. The control CPU 122 advantageously selects the DSP 186 as the input for audio D/A 184. The DSP 186 receives digitized audio from the audio decoder 182 and processes such audio to create more natural sounding audio. More particularly, in step 330 the DSP 186

configures the FFT processing element 186a to transform received audio signals that are in the time domain, to frequency domain audio signals.

In step 335, DSP 186 configures frequency scaling element 186b to scale the frequency of the frequency domain audio signal by a factor 1/*n*. The DSP 186 also configures the amplitude scaling element 186c to scale the amplitude of the frequency domain signals by 1/*n*. Advantageously, scaling the amplitude of the audio signal can reduce the energy content of the audio signal making the signal more manageable for processing.

The Appellant teaches that in step 340, the scaled audio signals that are in the frequency domain are transformed back to the time domain using an inverse fast Fourier transform or IFFT processing element 186d. By utilizing the frequency and amplitude scaling function of the DSP 186, the pitch or frequency of the digitized audio can be scaled up or down in order to compensate for the selective elimination of audio samples in step 325 associated with the change in the playback speed.

In step 345, the frequency and amplitude scaled time domain audio signal is used to generate the playback signal, and the trick mode playback is performed with the player 100 configured as described. In step 350, a determination is made whether to continue scaling the audio signal. The control CPU 122 periodically checks advanced feature processor 136 to determine whether fast forward playback mode has been terminated or is still selected. In the case where the fast forward playback mode has been selected, then the control CPU 122 returns the process to step 320 and continues trick mode playback. In the case where the current fast forward playback mode has been deselected, that is, the user has commanded that the trick mode playback be discontinued, then control returns to step 310.

The Appellant teaches that the inventive arrangements can also be applied to slow playback trick modes using the same techniques as described in FIGURE 3. In this case *n* will be a value less than 1x. For example, *n*= ½ for 50% slower playback. Further, in step 325, rather than dropping samples, selected time domain audio samples can be repeated at a rate inversely proportional to the slow playback speed *n* to generate an audio playback signal. The audio samples can be repeated at an average rate of about 1/*n*. In step 335, the frequency scaling element 186b can be configured to scale the frequency of the audio samples by a factor of 1/*n*. However, for the slow speed playback case, the amplitude scaling element 186c can be

configured to scale the amplitude of the audio samples by a factor *n*, rather than 1/n factor used for fast playback modes.

For the convenience of the Board of Patent Appeals and Interferences, Appellant's pending claims are presented below in claim format with elements read on the drawings and appropriate citations to at least one portion of the specification for each element of the appealed claims (with reference numerals added).

Claim 1 positively recites (with reference numerals added, where applicable):

> 1. A method for playing an audio track during video trick mode playback of a video presentation, the method comprising:
> reading (300) digital data from a storage medium (102), said digital data representing audio programming corresponding to the video presentation;
> decoding (315) a plurality of digital audio samples corresponding to a selected portion of the video presentation from a portion of said read digital data;
> repeating or dropping (325) selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation;
> transforming (330) said digital audio samples from time domain to corresponding frequency domain audio samples; and
> scaling (335) a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback. (See Appellant's specification, page 8, line 1 through page 9, line 24).

Claim 2 positively recites:

> 2. The method according to claim 1, further comprising generating (345) an audio playback signal corresponding only to a remaining set of said audio samples. (See Appellant's specification, page 10, lines 1-3).

Claim 3 positively recites:

> 3. The method according to claim 2, wherein said time domain audio samples are dropped at an average rate of every (n-1) of every n samples, where n is equal to the selected trick mode playback speed relative to a normal playback speed. (See Appellant's specification, page 9, lines 1-3).

Claim 4 positively recites:

> 4. The method according to claim 3, wherein said scaling step further comprises scaling said playback audio frequency by a factor of approximately 1/*n*. (See Appellant's specification, page 9, lines 19-20).

Claim 5 positively recites:

> 5. The method according to claim 4, wherein said scaling step (335) further comprises scaling an amplitude of said frequency domain audio samples by factor of approximately 1/*n*. (See Appellant's specification, page 9, lines 20-22).

Claim 6 positively recites:

> 6. The method according to claim 1, wherein said scaling step (335) further comprises transforming (340) said scaled frequency domain audio samples to corresponding time domain digital audio samples. (See Appellant's specification, page 9, lines 25-27).

Claim 7 positively recites:

> 7. The method according to claim 1, further comprising:
> repeating (325) selected ones of said time domain audio samples at a rate inversely proportional to a selected trick mode video playback speed of said video presentation to produce a trick mode set of audio samples; and,
> generating (345) an audio playback signal corresponding to said trick mode set of said audio samples. (See Appellant's specification, page 10, lines 15-17).

Claim 8 positively recites:

> 8. The method according to claim 7, wherein said time domain audio samples are repeated (325) at an average rate of about 1/n times, where n is equal to the selected trick mode playback speed relative to a normal playback speed. (See Appellant's specification, page 10, lines 17-18).

Claim 9 positively recites:

> 9. The method according to claim 8, wherein said scaling step (335) further comprises scaling said playback audio frequency by a multiplying factor of approximately 1/*n*. (See Appellant's specification, page 10, lines 18-20).

Claim 10 positively recites:

10. The method according to claim 9, wherein said scaling step (335) further comprises scaling an amplitude of said frequency domain audio samples by factor of approximately *n*. (See Appellant's specification, page 10, lines 20-23).

Claim 11 positively recites:

11. The method according to claim 1 wherein said storage medium (102) is selected from the group consisting of a DVD, a magneto optical disk, a magnetic hard disk, a video CD, and a solid state memory device. (See Appellant's specification, page 4, lines 20-23).

Claim 12 positively recites:

12. The method according to claim 1 wherein said coded digital data has an MPEG format and said reading step (300) further comprises decoding an MPEG bit stream to obtain said audio samples. (See Appellant's specification, page 4, lines 13-15 and page 6, lines 9-11).

Claim 13 positively recites:

13. An apparatus for playing an audio track during video trick mode playback of a video presentation, the apparatus comprising:

a storage medium reader (100) for reading digital data from a storage medium (102), said digital data comprising audio programming corresponding to the video presentation;

a decoder (182) for decoding from a portion of said read digital data representative of said audio programming, a plurality of digital audio samples corresponding to a selected portion of the video presentation;

a control processor (122) for repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation;

a digital signal processor (DSP) (186) comprising a fast Fourier transform (FFT) processing element (186a) for transforming said digital audio samples from time domain to corresponding frequency domain audio samples; and,

said digital signal processor (186) comprising a scaling element (186b) for scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback. (See Appellant's specification, page 4, line 25 through page 7 line 31).

Claim 14 positively recites:

> 14. The apparatus according to claim 13, wherein at least one of said decoder (182) and said DSP (186) comprises said control processor for repeating or dropping selected ones of said time domain audio samples at a rate approximately corresponding to a selected trick mode video playback speed of said video presentation. (See Appellant's specification, page 6, lines 16-17).

Claim 15 positively recites:

> 15. The apparatus according to claim 14, wherein said time domain audio samples are dropped at an average rate of (n-1) of every n samples, where n is equal to the selected trick mode playback speed relative to a normal playback speed. (See Appellant's specification, page 9, lines 1-3).

Claim 16 positively recites:

> 16. The apparatus according to claim 15, wherein said scaling element (186b) scales said playback audio frequency by a factor of approximately 1/n. (See Appellant's specification, page 7, lines 20-23 and page 9, lines 19-20).

Claim 17 positively recites:

> 17. The apparatus according to claim 16, wherein said scaling element further comprises an amplitude adjusting element (186c) for scaling an amplitude of said frequency domain audio samples by factor of approximately 1/n. (See Appellant's specification, page 7, lines 23-25 and page 9, lines 20-22).

Claim 18 positively recites:

> 18. The apparatus according to claim 13, wherein said DSP further comprises an inverse FFT (IFFT) processing element (186d) for transforming said scaled frequency domain audio samples to corresponding time domain digital audio samples for said audio playback signal. (See Appellant's specification, page 7, lines 25-28 and page 9, lines 25-27).

Claim 19 positively recites:

> 19. The apparatus according to claim 13, wherein said control processor (122) repeats selected ones of said time domain audio samples at a rate inversely proportional to a selected trick mode video playback speed of

said video presentation to produce a trick mode set of audio samples. (See Appellant's specification, page 10, lines 15-17).

Claim 20 positively recites:

20. The apparatus according to claim 19, wherein said audio samples are repeated at an average rate of about 1/*n* times, where n is equal to the selected trick mode playback speed relative to a normal playback speed. (See Appellant's specification, page 10, lines 17-18).

Claim 21 positively recites:

21. The apparatus according to claim 20, wherein said scaling element (186b) scales said playback audio frequency by a multiplying factor of approximately 1/*n*. (See Appellant's specification, page 7, lines 20-23 and page 10, lines 18-20).

Claim 22 positively recites:

22. The apparatus according to claim 21, wherein said DSP (186) further comprises an amplitude scaling element (186c) for scaling said frequency domain audio samples by a factor of approximately *n*. (See Appellant's specification, page 7, lines 23-25 and page 10, lines 20-23).

Claim 23 positively recites:

23. The apparatus according to claim 13, wherein said storage medium (102) is selected from the group consisting of a DVD, a magneto-optical disk, a magnetic hard disk, a video CD, and a solid state memory device. (See Appellant's specification, page 4, lines 20-23).

Claim 24 positively recites:

24. The apparatus according to claim 13, wherein said coded digital data is an MPEG format and said reading step further comprises decoding an MPEG bit stream to obtain said audio samples. (See Appellant's specification, page 4, lines 13-15 and page 6, lines 9-11).

Grounds of Rejections to be Reviewed on Appeal

1. Whether the Appellant's claims 1-2, 6, 11-14, 18, 23 and 24 are patentable under 35 U.S.C. § 102(e) over Suito et al. (US Patent No. 6,925,340, hereinafter "Suito").

2. Whether the Appellant's claims 7-10 and 19-22 are patentable under 35 U.S.C. § 103(a) over Suito in view of Shimura (US Patent No. 6,658,197).

2. Pending claims 1-2, 6, 11-14, 18, 23, 24 and 7-10, 19-22 have been grouped together, respectively, by the Examiner in their rejection. Appellant urges that each of the rejected claims stands on its own recitation, the claims being considered to be separately patentable for the reasons set forth in more detail *infra*.

ARGUMENT

I. THE EXAMINER ERRED IN REJECTING CLAIMS 1-2, 6, 11-14, 18, 23 and 24 UNDER 35 U.S.C. § 102 BECAUSE THE CITED REFERENCE FAILS TO ANTICIPATE AT LEAST A METHOD AND APPARATUS FOR PLAYING AN AUDIO TRACK DURING VIDEO TRICK MODE PLAYBACK OF A VIDEO PRESENTATION INCLUDING "REPEATING OR DROPPING SELECTED ONES OF SAID DIGITAL AUDIO SAMPLES AT A RATE CORRESPONDING TO A SELECTED TRICK MODE VIDEO PLAYBACK SPEED OF SAID VIDEO PRESENTATION", "TRANSFORMING SAID DIGITAL AUDIO SAMPLES FROM TIME DOMAIN TO CORRESPONDING FREQUENCY DOMAIN AUDIO SAMPLES" AND "SCALING A PLAYBACK AUDIO FREQUENCY OF SAID FREQUENCY DOMAIN AUDIO SAMPLES IN ACCORDANCE WITH SAID TRICK MODE PLAYBACK".

A. 35 U.S.C. § 102(e) - Claim 1

The Examiner rejected the Appellant's claim 1 under 35 U.S.C. § 102(e) as being anticipated by Suito et al. (US Patent No. 6,925,340, hereinafter "Suito"). The rejection is respectfully traversed.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrik Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1983)). (emphasis added). The Appellant respectfully submits that Suito absolutely fails to teach each and every element of at least the Appellant's claim 1, which specifically recites:

> "A method for playing an audio track during video trick mode playback of a video presentation, the method comprising:
> reading digital data from a storage medium, said digital data representing audio programming corresponding to the video presentation;
> decoding a plurality of digital audio samples corresponding to a selected portion of the video presentation from a portion of said read digital data;
> repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation;
> transforming said digital audio samples from time domain to corresponding frequency domain audio samples; and

scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback." (emphasis added).

With respect to at least claim 1, the Appellant's invention is directed at least in part to a method for playing an audio track during video trick mode playback of a video presentation including repeating or dropping selected ones of the **digital audio samples** at a rate corresponding to a selected trick mode video playback speed of the video presentation, transforming the decoded audio samples from a time domain to a corresponding frequency domain and scaling a playback audio frequency of the frequency domain audio samples in accordance with the trick mode playback.

In support of at least claim 1, the Appellant in the Specification specifically recites:

> "In step 315, the control CPU 122 can determine *n*, where *n* is the video trick mode playback speed relative to the normal playback speed. In step 320, the audio data for the segment of the video presentation that is being played back in the video trick mode can be read.
>
> In step 325, the control CPU 122 can configure the audio decoder 182 or DSP 186 to drop selected audio samples by dropping audio samples at a rate of (n-1) of every *n* samples. Dropping audio samples in this manner has the advantageous effect of speeding up the audio to substantially match the speed of the video. However, if the remaining audio samples were simply passed to the audio D/A 184 for subsequent conversion to analog format, then the result would be a change in frequency of the audio by a factor of *n*. This change in frequency can cause voices to be high pitched and difficult to understand. Accordingly, the digital audio output from the audio decoder 182 can be processed by DSP 186.
>
> In step 330, the DSP can transform remaining audio samples from time domain to their corresponding frequency domain equivalents. Control CPU 122 can advantageously select the DSP 186 as the input for audio D/A 184. The DSP 186 can receive digitized audio from the audio decoder 182 and processes such audio to create more natural sounding audio. More particularly, in step 330 the DSP 186 can configure the FFT processing element 186a to transform received audio signals that are in the time domain, to frequency domain audio signals.
>
> In step 335, DSP 186 can configure frequency scaling element 186b to scale the frequency of the frequency domain audio signal by a factor 1/*n*." (See Specification, page 7, line 23 through page 8, line 11).

In the Final Office Action, the Examiner alleges that Suito discloses "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation" because Suito discloses that for each processing unit period, sound absence portion(s) of the

reproduced sound signal are deleted or partially deleted within a range corresponding to a normal speed reproduction. The Appellant respectfully disagrees.

That is, in contrast to the invention of the Appellant, Suito is directed to a sound reproduction method and sound reproduction apparatus. In Suito, the method delimits a sound signal reproduced at a recording medium at a speed higher than a normal speed into successive processing unit periods. For each processing unit period, sound absence portion(s) of the reproduced sound signal are deleted (or partially deleted) within a range corresponding to a normal speed reproduction. Sound presence portions preceding and following the deleted absence portions are joined or compressed to produce a recognizable sound signal. However, there is absolutely no teaching, suggestion or disclosure in Suito for "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation" or "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" or "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1.

More specifically, in contrast to the invention of the Appellant Suito does not teach, suggest or disclose "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1. Suito, in contrast, teaches deleting portions of a signal which do not contain audio samples but instead contain the absence of sound or audio samples. In addition, the Appellant specifically teaches and claims in at least claim 1 that the samples are repeated or dropped at a rate corresponding to a selected trick mode video playback speed of the video presentation. In direct contrast to the invention of the Appellant, Suito teaches that sound absence portion(s) of the reproduced sound signal are deleted within a range corresponding to a **normal speed** reproduction. As such, it is very clear that the teachings of Suito for deleting portions of a signal which do not contain audio samples but instead contain the absence of sound or audio samples and deleting the sound absence within a range corresponding to a **normal speed** reproduction absolutely fail to teach, suggest or anticipate at least the Appellant's claim 1, which specifically recites

"repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation".

Even further, there is absolutely no teaching, suggestion or disclosure in Suito for "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1. More specifically and as recited above, the Appellant teaches that in one embodiment a DSP can transform remaining audio samples from a time domain to corresponding frequency domain equivalents. That is, in the invention of the Appellant, the DSP 186 configure an FFT processing element to transform received audio signals that are in the time domain, to frequency domain audio signals. There is absolutely no teaching, suggestion or disclosure in Suito for such transformation. More specifically, as cited by the Examiner Suito specifically recites:

> "FIG. 3 shows a construction of the amplitude suppression processing section 70. Referring first to FIG. 3, sound data of an output of the MPEG audio decoder 14 described above are inputted as an input sound signal to an input terminal 71 of the amplitude suppression processing section 70. The input sound signal is supplied to a consonant component separation filter 72 and a formant component separation filter 73, and consonant components in the input sound signal are extracted by and outputted from the consonant component separation filter 72." (See Suito, col. 7, lines 22-31).

And

> "Then, the output of the formant component separation filter 73 and the control coefficient W from the control section 75 are supplied to an amplitude suppression section 76, by which the output of the formant component separation filter 73 is attenuated with the control coefficient W as hereinafter described.
>
> Further, a frequency characteristic correction filter 77 mixes the output of the consonant component separation filter 72 and an output of the amplitude suppression section 76 and performs a required frequency characteristic correction process such as equalizing processing for a signal obtained by the mixture. An output sound signal after the processing by the frequency characteristic correction filter 77 is obtained at an output terminal 79 of the amplitude suppression processing section 70. The frequency characteristic correction filter 77 has a filter coefficient and a processing band set in response to a reproduction magnification for higher speed reproduction. However, the output of the consonant component separation filter 72 and the output of the amplitude suppression section 76 may be merely mixed without performing the correction of the frequency characteristic by the frequency characteristic correction filter 77." (See Suito, col. 7, line 53 through col. 8, line 8).

As clearly depicted by at least the portion of Suito presented above, in Suito a frequency characteristic correction filter mixes the output of the consonant component separation filter and an output of the amplitude suppression section and performs a required frequency characteristic correction process, such as equalizing processing for a signal obtained by the mixture. However the Appellant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Suito for "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1.

Even further, the Appellant submits that there is absolutely no teaching, suggestion or disclosure in Suito for "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1. More specifically and as recited above, the Appellant teaches that in one embodiment, the DSP of the Appellant's invention can configure a frequency scaling element to scale the frequency of the frequency domain audio signal by a factor corresponding to a trick mode video playback speed. The Appellant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Suito for such frequency scaling. In fact, the only teaching in Suito for anything similar to scaling is the teachings if Suito for amplitude suppression. However, the Appellant submits that amplitude suppression in no way teaches, suggests or anticipates the frequency scaling as taught and claimed by the Appellant. In fact in Suito, the only mention of frequency is a frequency characteristic correction filter, which mixes the output of a consonant component separation filter and an output of an amplitude suppression section and performs a required frequency characteristic correction process, such as equalizing processing for a signal obtained by the mixture. That is in Suito, a frequency characteristic correction filter mixes the output of a component separation filter and an amplitude suppression section to time the signals to ensure the proper mixture of the signals. However, the Appellant respectfully submits that there is absolutely no teaching suggestion or disclosure in Suito for scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1.

In the Final Office Action, the Examiner alleges that because Suito teaches that the amplitude of data signals are suppressed and that video data and sound data is compressed in accordance with a compression coding method and a multiplexing method of the MPEG-2 standard, which the Examiner alleges means that samples are transformed from the time domain to the frequency domain, that this anticipates "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1. The Appellant respectfully disagrees.

More specifically, the Appellant in support of claim 1 specifically recites:

> "In step 335, DSP 186 can configure frequency scaling element 186b to scale the frequency of the frequency domain audio signal by a factor 1/*n*." (See Specification, page 8, lines 10-11).

As clearly evident from at least the portion of the Appellant's Specification presented above, in one embodiment of the invention of the Appellant as claimed by claim 1, a frequency scaling element scales the frequency of the frequency domain audio signal.

In contrast to the invention of the Appellant, Suito only teaches a frequency characteristic correction filter which mixes the output of a component separation filter and an amplitude suppression section to time the signals to ensure the proper mixture of the signals. The Appellant respectfully submits that such teachings absolutely fail to teach, suggest or anticipate at least "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1. Furthermore, the Appellant submits that the teachings of Suito that the amplitude of data signals are suppressed and that video data and sound data is compressed in accordance with a compression coding method and a multiplexing method of the MPEG-2 standard as described by the Examiner, also absolutely fails to teach, suggest or anticipate "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1.

As such and for at least the reasons recited above, the Appellant submits that as clearly presented above, the teachings of Suito absolutely fail to teach each and every element of the Appellant's claimed invention and at least claim 1, arranged as in the claim as required for anticipation. As such, the Appellant submits that the Appellant's claim 1 is not anticipated by the teachings of Suito and fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

Therefore, the Appellant submits that for at least the reasons recited above, independent claim 1 is not anticipated by the teachings of Suito and, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

B. 35 U.S.C. § 102(e) - Claim 2

Claim 2 depends directly from independent claim 1 and recites further technical features thereof. At least because the teachings of Suito absolutely fail to teach, suggest or anticipate the invention of the Appellant with regard to at least the Appellant's independent claim 1, the Appellant respectfully submits that dependent claim 2 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 1. The Appellant further submits that Suito also fails to teach, suggest or anticipate the Appellant's claim 1 further limited by "generating an audio playback signal corresponding only to a remaining set of said audio samples" as recited in claim 2.

That is, and for at least the same reasons provided in Section A above, at least because Suito fails to teach, suggest or anticipate at least a method and apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 2, which depends directly from independent claim 1.

Therefore, the Appellant submits that claim 2, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

C. 35 U.S.C. § 102(e) - Claim 6

Claim 6 depends directly from independent claim 1 and recites further technical features thereof. At least because the teachings of Suito absolutely fail to teach, suggest or anticipate the invention of the Appellant with regard to at least the Appellant's independent claim 1, the Appellant respectfully submits that dependent claim 6 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 1. The Appellant further submits that Suito also fails to teach, suggest or anticipate the Appellant's claim 1 further limited by "wherein said scaling step further comprises transforming said scaled frequency domain audio samples to corresponding time domain digital audio samples" as recited in claim 6.

That is, and for at least the same reasons provided in Section A above, at least because Suito fails to teach, suggest or anticipate at least a method and apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 6, which depends directly from independent claim 1.

Therefore, the Appellant submits that claim 6, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

D. 35 U.S.C. § 102(e) - Claim 11

Claim 11 depends directly from independent claim 1 and recites further technical features thereof. At least because the teachings of Suito absolutely fail to teach, suggest or anticipate the invention of the Appellant with regard to at least the Appellant's independent claim 1, the Appellant respectfully submits that dependent

claim 11 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 1. The Appellant further submits that Suito also fails to teach, suggest or anticipate the Appellant's claim 1 further limited by "wherein said storage medium is selected from the group consisting of a DVD, a magneto optical disk, a magnetic hard disk, a video CD, and a solid state memory device" as recited in claim 11.

That is, and for at least the same reasons provided in Section A above, at least because Suito fails to teach, suggest or anticipate at least a method and apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 11, which depends directly from independent claim 1.

Therefore, the Appellant submits that claim 11, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

E. 35 U.S.C. § 102(e) - Claim 12

Claim 12 depends directly from independent claim 1 and recites further technical features thereof. At least because the teachings of Suito absolutely fail to teach, suggest or anticipate the invention of the Appellant with regard to at least the Appellant's independent claim 1, the Appellant respectfully submits that dependent claim 12 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 1. The Appellant further submits that Suito also fails to teach, suggest or anticipate the Appellant's claim 1 further limited by "wherein said coded digital data has an MPEG format and said reading step further comprises decoding an MPEG bit stream to obtain said audio samples" as recited in claim 12.

That is, and for at least the same reasons provided in Section A above, at least because Suito fails to teach, suggest or anticipate at least a method and

apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 12, which depends directly from independent claim 1.

Therefore, the Appellant submits that claim 12, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

F. 35 U.S.C. § 102(e) - Claim 13

Claim 13 is an independent claim that recites similar relevant features as recited in the Appellant's independent claim 1. More specifically, claim 13 claims an apparatus for playing an audio track during video trick mode playback of a video presentation including "a control processor for repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "a digital signal processor (DSP) comprising a fast Fourier transform (FFT) processing element for transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "said digital signal processor comprising a scaling element for scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback".

As described in Section A above, at least because Suito fails to teach, suggest or anticipate at least a method and apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the

Appellant's Specification and claimed in at least the Appellant's claim 1, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 13, which is an independent claim that recites similar relevant features as independent claim 1.

Therefore, the Appellant submits that claim 13, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

G. 35 U.S.C. § 102(e) - Claim 14

Claim 14 depends directly from independent claim 13 and recites further technical features thereof. At least because the teachings of Suito absolutely fail to teach, suggest or anticipate the invention of the Appellant with regard to at least the Appellant's independent claim 13, the Appellant respectfully submits that dependent claim 14 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 13. The Appellant further submits that Suito also fails to teach, suggest or anticipate the Appellant's claim 13 further limited by "wherein at least one of said decoder and said DSP comprises said control processor for repeating or dropping selected ones of said time domain audio samples at a rate approximately corresponding to a selected trick mode video playback speed of said video presentation" as recited in claim 14.

That is, and for at least the same reasons provided in Sections A and F above, at least because Suito fails to teach, suggest or anticipate at least a method and apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 1, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 14, which depends directly from independent claim 13.

Therefore, the Appellant submits that claim 14, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

H. 35 U.S.C. § 102(e) - Claim 18

Claim 18 depends directly from independent claim 13 and recites further technical features thereof. At least because the teachings of Suito absolutely fail to teach, suggest or anticipate the invention of the Appellant with regard to at least the Appellant's independent claim 13, the Appellant respectfully submits that dependent claim 18 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 13. The Appellant further submits that Suito also fails to teach, suggest or anticipate the Appellant's claim 13 further limited by "wherein said DSP further comprises an inverse FFT (IFFT) processing element for transforming said scaled frequency domain audio samples to corresponding time domain digital audio samples for said audio playback signal" as recited in claim 18.

That is, and for at least the same reasons provided in Sections A and F above, at least because Suito fails to teach, suggest or anticipate at least a method and apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 13, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 18, which depends directly from independent claim 13.

Therefore, the Appellant submits that claim 18, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

I. 35 U.S.C. § 102(e) - Claim 23

Claim 23 depends directly from independent claim 13 and recites further technical features thereof. At least because the teachings of Suito absolutely fail to teach, suggest or anticipate the invention of the Appellant with regard to at least the Appellant's independent claim 13, the Appellant respectfully submits that dependent claim 23 is also not anticipated and is allowable for at least the reasons stated above

with respect to independent claim 13. The Appellant further submits that Suito also fails to teach, suggest or anticipate the Appellant's claim 13 further limited by "wherein said storage medium is selected from the group consisting of a DVD, a magneto-optical disk, a magnetic hard disk, a video CD, and a solid state memory device" as recited in claim 23.

That is, and for at least the same reasons provided in Sections A and F above, at least because Suito fails to teach, suggest or anticipate at least a method and apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 13, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 23, which depends directly from independent claim 13.

Therefore, the Appellant submits that claim 23, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

J. 35 U.S.C. § 102(e) - Claim 24

Claim 24 depends directly from independent claim 13 and recites further technical features thereof. At least because the teachings of Suito absolutely fail to teach, suggest or anticipate the invention of the Appellant with regard to at least the Appellant's independent claim 13, the Appellant respectfully submits that dependent claim 24 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 13. The Appellant further submits that Suito also fails to teach, suggest or anticipate the Appellant's claim 13 further limited by "wherein said coded digital data is an MPEG format and said reading step further comprises decoding an MPEG bit stream to obtain said audio samples" as recited in claim 24.

That is, and for at least the same reasons provided in Sections A and F above, at least because Suito fails to teach, suggest or anticipate at least a method

and apparatus for playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation", "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" and "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed in at least the Appellant's claim 13, the Appellant respectfully submits that Suito also fails to teach, suggest or anticipate the Appellant's invention as claimed in dependent claim 24, which depends directly from independent claim 13.

Therefore, the Appellant submits that claim 24, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

II. THE EXAMINER ERRED IN REJECTING CLAIMS 7-10 AND 19-22 UNDER 35 U.S.C. § 103 BECAUSE THE CITED REFERENCES FAIL TO MAKE OBVIOUS AT LEAST A METHOD AND APPARATUS FOR PLAYING AN AUDIO TRACK DURING VIDEO TRICK MODE PLAYBACK OF A VIDEO PRESENTATION INCLUDING "REPEATING OR DROPPING SELECTED ONES OF SAID DIGITAL AUDIO SAMPLES AT A RATE CORRESPONDING TO A SELECTED TRICK MODE VIDEO PLAYBACK SPEED OF SAID VIDEO PRESENTATION", "TRANSFORMING SAID DIGITAL AUDIO SAMPLES FROM TIME DOMAIN TO CORRESPONDING FREQUENCY DOMAIN AUDIO SAMPLES" AND "SCALING A PLAYBACK AUDIO FREQUENCY OF SAID FREQUENCY DOMAIN AUDIO SAMPLES IN ACCORDANCE WITH SAID TRICK MODE PLAYBACK".

A. 35 U.S.C. § 103(a) - Claims 7-10 and 19-22

The Examiner rejected the Appellant's claims 7-10 and 19-22 as being unpatentable over Suito as applied to claims 1 and 13 above, and further in view of Shimura (US Patent No. 6,658,197). The rejection is respectfully traversed.

The Examiner applied the Suito for teaching all of the aspects of the Appellant's claims 1 and 13 but concedes that the Suito fails to teach repeating selected ones of the audio samples at a rate inversely proportional to a selected trick mode video playback speed of said video presentation to produce a trick mode set of audio samples, and generating an audio playback signal corresponding to said trick mode set of said audio samples. However, the Examiner cites Shimura for teaching repeating selected ones of the audio samples at a rate inversely proportional to a selected trick mode video playback speed of said video presentation to produce a trick mode set of audio samples, and generating an audio playback signal corresponding to said trick mode set of said audio samples. The Appellant respectfully disagrees.

Claims 7-10 and 19-22 are dependent claims that depend either directly or indirectly from independent claims 1 and 13. As described above, the Appellant submits that the teachings of Suito fail to teach, suggest or anticipate the Appellant's claims 1 and 13 for at least the reasons recited above. As such and at least because the teachings of Suito fail to teach, suggest or anticipate the Appellant's claims 1 and 13 for at least the reasons recited above, the Appellant further submits that the teachings of Suito fail to teach, suggest or render obvious the Appellant's

claims 7-10 and 19-22 which depend directly or indirectly from the Appellant's claims 1 and 13, respectively.

Furthermore, the Appellant submits that the teachings of Shimura fail to bridge the substantial gap between the teachings of Suito and the invention of the Appellant. More specifically, the Appellant submits that the teachings of Shimura for an audio signal reproduction apparatus and for reproducing a digital audio signal recorded on a recording medium by a predetermined number of samples, at a recording medium travel speed different from the travel speed during the recording fail to teach, suggest or make obvious a method and apparatus playing an audio track during video trick mode playback of a video presentation including at least "repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation" or "transforming said digital audio samples from time domain to corresponding frequency domain audio samples" or "scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as claimed by the Appellant's independent claims 1 and 13.

That is, in Shimura the pitch control of a reproduced digital audio signal is performed such that when the reproduction speed of the recording medium is lower than the travel speed during the recording, in response to the reproduction speed, pitch is automatically controlled to a fixed or variable pitch. Furthermore, in Shimura even if the reproduction is at a lowered speed, it is possible to recognize the contents of conversation or melody of a music source as well as to distinguish from noise such that the reproduction sound clearness is enhanced.

The invention of Shimura includes a reproduction means for reproducing from the recording medium the digital audio signal based on the predetermined number of samples; a pitch control means for performing pitch control of the digital audio signal reproduced; a speed detection means for detecting a reproduction speed of the recording medium from elements of a travel mechanism of the recording means; and a pitch decision means responding to the output of the speed detection means, and in a case if the reproduction speed of the recording medium is lower than the travel speed of the recording, so that the pitch control means decides a pitch variable period and a pitch fixed interval. However, there is absolutely no teaching, suggestion or disclosure in Shimura for at least "a control processor for repeating or dropping selected ones of said digital audio samples at a rate corresponding to a

selected trick mode video playback speed of said video presentation" and "a digital signal processor (DSP) comprising a fast Fourier transform (FFT) processing element for transforming said digital audio samples from time domain to corresponding frequency domain audio samples" where "said digital signal processor comprising a scaling element for scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback" as taught in the Appellant's Specification and claimed by at least the Appellant's claims 1 and 13.

Therefore, the Appellant submits that for at least the reasons recited above, independent claims 1 and 13 are not rendered obvious by the teachings of Suito and Shimura, alone or in any allowable combination, and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder. As such and at least because the teachings of Suito and Shimura, alone or in any allowable combination, fail to teach, suggest or render obvious the Appellant's claims 1 and 13 for at least the reasons recited above, the Appellant further submits that the teachings of Suito and Shimura, alone or in any allowable combination, also fail to teach, suggest or render obvious the Appellant's claims 7-10 and 19-22 which depend directly or indirectly from the Appellant's claims 1 and 13, respectively, and, as such, claims 7-10 and 19-22 fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

Conclusion

Thus, the Appellant submits that none of the claims presently in the application are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provisions of 35 U.S.C. § 103. Consequently, the Appellant believes all these claims are presently in condition for allowance.

For at least the reasons advanced above, the Appellant respectfully urges that the rejection of claims 1-2, 6, 11-14, 18, 23 and 24 as being anticipated under 35 U.S.C. §102 and the rejection of claims 7-10 and 19-22 as being obvious under 35 U.S.C. §103 are improper. Reversal of the rejections in this Appeal is respectfully requested.

Respectfully submitted,

05 June 07
Date

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CLAIMS APPENDIX

1. (Previously Presented) A method for playing an audio track during video trick mode playback of a video presentation, the method comprising:

reading digital data from a storage medium, said digital data representing audio programming corresponding to the video presentation;

decoding a plurality of digital audio samples corresponding to a selected portion of the video presentation from a portion of said read digital data;

repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation;

transforming said digital audio samples from time domain to corresponding frequency domain audio samples; and

scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback.

2. (Previously Presented) The method according to claim 1, further comprising generating an audio playback signal corresponding only to a remaining set of said audio samples.

3. (Original) The method according to claim 2, wherein said time domain audio samples are dropped at an average rate of every (n-1) of every n samples, where n is equal to the selected trick mode playback speed relative to a normal playback speed.

4. (Original) The method according to claim 3, wherein said scaling step further comprises scaling said playback audio frequency by a factor of approximately 1/*n*.

5. (Original) The method according to claim 4, wherein said scaling step further comprises scaling an amplitude of said frequency domain audio samples by factor of approximately 1/*n*.

6. (Original) The method according to claim 1, wherein said scaling step further comprises transforming said scaled frequency domain audio samples to

corresponding time domain digital audio samples.

7. (Original) The method according to claim 1, further comprising:

repeating selected ones of said time domain audio samples at a rate inversely proportional to a selected trick mode video playback speed of said video presentation to produce a trick mode set of audio samples; and,

generating an audio playback signal corresponding to said trick mode set of said audio samples.

8. (Original) The method according to claim 7, wherein said time domain audio samples are repeated at an average rate of about 1/n times, where n is equal to the selected trick mode playback speed relative to a normal playback speed.

9. (Original) The method according to claim 8, wherein said scaling step further comprises scaling said playback audio frequency by a multiplying factor of approximately 1/*n*.

10. (Original) The method according to claim 9, wherein said scaling step further comprises scaling an amplitude of said frequency domain audio samples by factor of approximately *n*.

11. (Previously Presented) The method according to claim 1 wherein said storage medium is selected from the group consisting of a DVD, a magneto optical disk, a magnetic hard disk, a video CD, and a solid state memory device.

12. (Original) The method according to claim 1 wherein said coded digital data has an MPEG format and said reading step further comprises decoding an MPEG bit stream to obtain said audio samples.

13. (Previously Presented) An apparatus for playing an audio track during video trick mode playback of a video presentation, the apparatus comprising:

a storage medium reader for reading digital data from a storage medium, said digital data comprising audio programming corresponding to the video presentation;

a decoder for decoding from a portion of said read digital data representative of said audio programming, a plurality of digital audio samples corresponding to a selected portion of the video presentation;

a control processor for repeating or dropping selected ones of said digital audio samples at a rate corresponding to a selected trick mode video playback speed of said video presentation;

a digital signal processor (DSP) comprising a fast Fourier transform (FFT) processing element for transforming said digital audio samples from time domain to corresponding frequency domain audio samples; and,

said digital signal processor comprising a scaling element for scaling a playback audio frequency of said frequency domain audio samples in accordance with said trick mode playback.

14. (Previously Presented) The apparatus according to claim 13, wherein at least one of said decoder and said DSP comprises said control processor for repeating or dropping selected ones of said time domain audio samples at a rate approximately corresponding to a selected trick mode video playback speed of said video presentation.

15. (Original) The apparatus according to claim 14, wherein said time domain audio samples are dropped at an average rate of (n-1) of every n samples, where n is equal to the selected trick mode playback speed relative to a normal playback speed.

16. (Original) The apparatus according to claim 15, wherein said scaling element scales said playback audio frequency by a factor of approximately 1/n.

17. (Original) The apparatus according to claim 16, wherein said scaling element further comprises an amplitude adjusting element for scaling an amplitude of said frequency domain audio samples by factor of approximately 1/n.

18. (Original) The apparatus according to claim 13, wherein said DSP further comprises an inverse FFT (IFFT) processing element for transforming said scaled frequency domain audio samples to corresponding time domain digital audio samples for said audio playback signal.

19. (Currently Amended) The apparatus according to claim 13, wherein said control processor repeats selected ones of said time domain audio samples at a rate inversely proportional to a selected trick mode video playback speed of said video presentation to produce a trick mode set of audio samples.

20. (Original) The apparatus according to claim 19, wherein said audio samples are repeated at an average rate of about 1/*n* times, where n is equal to the selected trick mode playback speed relative to a normal playback speed.

21. (Original) The apparatus according to claim 20, wherein said scaling element scales said playback audio frequency by a multiplying factor of approximately 1/*n*.

22. (Original) The apparatus according to claim 21, wherein said DSP further comprises an amplitude scaling element for scaling said frequency domain audio samples by a factor of approximately *n*.

23. (Original) The apparatus according to claim 13, wherein said storage medium is selected from the group consisting of a DVD, a magneto-optical disk, a magnetic hard disk, a video CD, and a solid state memory device.

24. (Original) The apparatus according to claim 13, wherein said coded digital data is an MPEG format and said reading step further comprises decoding an MPEG bit stream to obtain said audio samples.

EVIDENCE APPENDIX

Appellant asserts that there is no evidence to be submitted in accordance with this section.

RELATED PROCEEDINGS APPENDIX

Appellant asserts that there are no copies of decisions to be submitted in accordance with this section.